

Version with markings to show changes made.

Original Claims

## Remarks / Arguments

These claims have not been further modified since they were removed from the original specification per office action request of 1/17/01.

In this marked-up original, any material that has been removed (for the clean version) is surrounded with brackets ({}). New/added material that was not in the original is underlined(\_).

## Remarks / Arguments

These claims have not been further modified since they were removed from the original specification per office action request of 1/17/01.

## CLAIMS {OR CLAIMS}

1. {A process for fermentation monitoring by means of a mass balance methodology in which:
  - (a) starting chemical species concentrations are measured;
  - (b) one or all of the products formed are dynamically measured;
  - (c) the reaction is monitored/described via a dynamic mass balance calculation as the fermentation proceeds to completion.}

A process of fermentation monitoring in which the reacting chemical species are quantified using a cellular yield curve to create a mass balance between all of the reacting chemical species. A cellular yield curve being a mathematical relationship between substrate utilization and cellular growth. The fermentation monitoring process comprising the steps of:

  - (a) measuring starting chemical species concentrations;
  - (b) dynamically measuring one or all of the concentrations of the reacting chemical species;
  - (c) monitoring and describing the chemical species concentrations via a mass balance calculation as the fermentation proceeds.
2. A process for fermentation monitoring according to claim 1 applied to a flow-through system.
3. A process of fermentation control relying on the methodology of claim 1 wherein the timing for control interventions is gauged, and the effects of the intervention are observed.

4. A process for fermentation monitoring according to claim 1 wherein the fermentation substrates and products are different than those outlined in the specification, but the monitoring and/or control methodology are the same.
5. A process for fermentation monitoring according to claim 1 wherein empirical data is acquired to determine the chemical formula for the species in the reaction.